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**CERTIFICATE OF MAILING PURSUANT TO 37 C.F.R. §1.8**

I hereby certify that this correspondence and attached document pursuant to 37 C.F.R. §1.8, are being deposited with the United States Postal Services as first class mail in an envelope addressed to: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on:

Date: August 15, 2005

By Deane M. Richardson  
Signature of Person Depositing Mail



**IN THE UNITED STATES PATENT AND  
TRADEMARK OFFICE**

*UTILITY PATENT*

Applicant(s): Tim Dyer et al.

Attorney Docket No.: 35013.4000

Serial No.: 09/836,426

Art Unit No.: 3723

Filed: April 17, 2001

Examiner: McDonald, Shantese  
L.

TITLE: CHEMICAL MECHANICAL  
POLISHING METHOD AND  
APPARATUS FOR REMOVING  
MATERIAL FROM A SURFACE OF  
A WORK PIECE THAT INCLUDES  
LOW-K MATERIAL

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OFFICE OF PETITIONS

**PETITION TO WITHDRAW HOLDING OF ABANDONMENT  
PURSUANT TO 37 C.F.R. §1.181**

Mail Stop Petitions  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

In response to the Notice of Abandonment mailed June 16, 2005, Applicants submit this Petition to Withdraw the Holding of Abandonment pursuant to 37 C.F.R §1.181 and MPEP 711.03(c) for the above-identified application.

Applicants received the attached June 16, 2005 Notice of Abandonment (Exhibit A) alleging a failure to respond to the Office letter dated October 20, 2003 in the above-identified application. Applicants disagree with the assertions set forth in the Notice of Abandonment and therefore timely submit this petition to withdraw the holding of abandonment. In particular, Applicants submit that the application should not be abandoned and that a non-final office action should be mailed to Applicants.

A brief summary of the relevant history of this case is as follows.

On July 15, 2003, the Examiner issued a Final Office Action rejecting all pending claims. On October 15, 2003, Applicants timely responded to that Final Office Action. In their response, Applicants noted that the principal reference relied on by the Examiner was improper. In December, 2003, the undersigned discussed the case with the Examiner and again noted that the principal reference was improper. At that time, the Examiner stated that she would review the matter with her supervisor and get back to the undersigned. Thereafter, the undersigned left several voicemail messages for the Examiner and spoke with the Examiner on multiple occasions about the status of the case. The date of these voicemail messages and conversations are documented in the attached Declaration of Cynthia L. Pillote (Exhibit B) and time entries of Ms. Pillote (Exhibit C). Finally, on June 14, 2004, the Examiner left a voicemail message for the undersigned, stating that the Examiner would issue a new, non-final office action. The transcript of this voicemail message is attached hereto as Exhibit D. Applicants relied on the assertion by the Examiner that a new office action would issue and therefore did not further respond to the outstanding action. After the June 14, 2004 voicemail message, the undersigned continued to follow up with the Examiner by leaving a voicemail message, which went unreturned by the Examiner. Instead, a Notice of Abandonment was issued.

In view of the circumstances that led to the Notice of Abandonment, Applicants hereby respectfully request that the Commissioner withdraw the holding of abandonment, since the application became abandoned as a result of the Examiner's failure to send another office action, and through no fault of Applicants.

If the Commissioner concludes that, for any reason, this petition should not be granted, Applicants request consideration of attached Petition to Revive Abandoned Application

### CONCLUSION

In view of the above remarks, Applicants respectfully request that the Commissioner withdraw the Notice of Abandonment and further request that the Examiner issue a non-final office action.

The Commissioner and/or Examiner are invited to telephone the undersigned at (602) 382-6296 if that would help further resolution of this petition. Applicants authorize and respectfully request that any over payment or deficiency in fees be credited or debited from deposit account no. 19-2814, for which purpose a duplicate copy of this sheet is attached. This statement does NOT authorize charge of the Issue Fee.

Respectfully submitted,

Dated: 8/15/05

By:   
Cynthia L. Pillote, Reg. No. 42,999

**Snell & Wilmer L.L.P.**  
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EXHIBIT A



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/836,426	04/17/2001	Tim Dyer	35013.4000	6845

CLP 7590 06/16/2005  
Snell & Wilmer LLP  
One Arizona Center  
400 E. Van Buren Street  
Phoenix, AZ 85004-2202

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JUN 20 2005

SNELL & WILMER

EXAMINER

MCDONALD, SHANTESE L

ART UNIT PAPER NUMBER

3723

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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SNELL &amp; WILMER

## Notice of Abandonment

Application No.

09/836,426

Examiner

Shantese L. McDonald

Applicant(s)

DYER ET AL.

Art Unit


3723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

This application is abandoned in view of:

AUG 19 2005

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on 20 October 2003. **OFFICE OF PETITIONS**  
 (a) ☐ A reply was received on \_\_\_\_\_ (with a Certificate of Mailing or Transmission dated \_\_\_\_\_), which is after the expiration of the period for reply (including a total extension of time of \_\_\_\_\_ month(s)) which expired on \_\_\_\_\_.  
 (b) ☐ A proposed reply was received on \_\_\_\_\_, but it does not constitute a proper reply under 37 CFR 1.113 (a) to the final rejection. (A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).  
 (c) ☐ A reply was received on \_\_\_\_\_ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).  
 (d) ☒ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).  
 (a) ☐ The issue fee and publication fee, if applicable, was received on \_\_\_\_\_ (with a Certificate of Mailing or Transmission dated \_\_\_\_\_), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).  
 (b) ☐ The submitted fee of \$\_\_\_\_\_ is insufficient. A balance of \$\_\_\_\_\_ is due.  
 The issue fee required by 37 CFR 1.18 is \$\_\_\_\_\_. The publication fee, if required by 37 CFR 1.18(d), is \$\_\_\_\_\_.  
 (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).  
 (a) ☐ Proposed corrected drawings were received on \_\_\_\_\_ (with a Certificate of Mailing or Transmission dated \_\_\_\_\_), which is after the expiration of the period for reply.  
 (b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filing of a continuing application.
6. ☐ The decision by the Board of Patent Appeals and Interference rendered on \_\_\_\_\_ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☐ The reason(s) below:

  
 Joseph J. Hail, III  
 Supervisory Patent Examiner  
 Technology Center 3700

Petitions to revive under 37 CFR 1.137(a) or (b), or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.

**EXHIBIT B**

**IN THE UNITED STATES  
PATENT AND TRADEMARK OFFICE**

UTILITY PATENT

Applicants: Tim Dyer et al.

Docket No.: 35013.4000

Serial No.: 09/836,426

Art Unit No.: 3723

Filed: April 17, 2001

Examiner: McDonald, Shantese L.

For: CHEMICAL MECHANICAL  
POLISHING METHOD AND  
APPARATUS FOR REMOVING  
MATERIAL FROM A SURFACE  
OF A WORK PIECE THAT  
INCLUDES LOW-K MATERIAL

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**OFFICE OF PETITIONS**

**DECLARATION OF CYNTHIA L. PILLOTE IN SUPPORT OF  
PETITION TO WITHDRAW HOLDING OF ABANDONMENT AND  
PETITION TO REVIVE ABANDONED APPLICATION**

1) I, Cynthia L. Pillote, make this Declaration in support of the accompanying Petition to Withdraw Holding of Abandonment of the above captioned Patent Application, and the Petition to Revive Abandoned Application, for which application I am attorney of record and which I prosecuted before the United States Patent and Trademark Office.

2) On December 15, 2003, I discussed the present case with the Examiner regarding the outstanding office action.

3) On December 18, 2003, I left a voicemail message with Examiner McDonald regarding the status of the case.

4) On January 16, 2004, I left another voicemail message with Examiner McDonald to follow up regarding the status of the case.

5) On May 21, 2004, I left another voicemail message with Examiner McDonald regarding the status of the case.

6) On June 1, 2004, I discussed the case with Examiner McDonald and faxed to her the Notice of Recordation of Assignment Document for the present invention that indicated common ownership between present invention and cited reference.

7) On June 3, 2004, I left a voicemail message with Examiner McDonald regarding the fax sent on June 1, 2004 that included the Notice of Recordation of Assignment Document

for the present invention, evidencing common ownership between the present invention and the cited reference.

8) On June 7, 2004, I discussed with Examiner McDonald the assignment and common ownership issues.

9) On June 8, 2004, I left a voice mail message with Examiner McDonald regarding the status of the case and inquired about the issuance of a new office action.

10) On June 14, 2004, I received a voice mail message from Examiner McDonald stating that she had found someone to discuss the case with, and that a new first or non-final action would soon be issued.

11) On June 24, 2005, I left a voice mail message with Examiner McDonald regarding the status of the case.

12) I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing therefrom.

Date: 8/15/05



Cynthia L. Pillote  
Reg. No. 42,999

# EXHIBIT C

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OFFICE OF PETITIONS

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ASSIGNMENT THAT WAS FAXED TO HIM ON TUESDAY  
AND THE LOUGHER REFERENCE

		**TOTAL THIS DAY-----	0.20	
35013.4000	06/07/04 NOVELLUS	USPA ORBITAL POLISHER	0.20	
	TELEPHONE CONFERENCE WITH EXAMINER REGARDING ASSIGNMENT AND COMMON OWNERSHIP OF LOUGHER REFERENCE AND APPLICATION; EXAMINER WILL CHECK WITH SUPERVISOR AS TO NEXT APPROPRIATE STEP			
		**TOTAL THIS DAY-----	0.20	
35013.4000	06/08/04 NOVELLUS	USPA ORBITAL POLISHER	0.20	
	VOICEMAIL MESSAGE WITH EXAMINER REGARDING ISSUANCE OF NEW OFFICE ACTION			
		**TOTAL THIS DAY-----	0.20	
35013.4000	06/24/05 NOVELLUS	USPA ORBITAL POLISHER	0.20	
	VOICEMAIL MESSAGE WITH EXAMINER MCDONALD REGARDING STATUS OF CASE			
35013.4000	12/18/03 NOVELLUS	USPA ORBITAL POLISHER	0.20	
	VOICEMAIL MESSAGE WITH EXAMINER REGARDING STATUS OF CASE			
		**TOTAL THIS DAY-----	0.20	
35013.4000	01/16/04 NOVELLUS	USPA ORBITAL POLISHER	0.20	
	VOICEMAIL MESSAGE WITH EXAMINER REGARDING INTERVIEW REGARDING CASE			
		**TOTAL THIS DAY-----	0.20	
35013.4000	05/21/04 NOVELLUS	USPA ORBITAL POLISHER	0.20	
	TELEPHONE CONFERENCE WITH EXAMINER REGARDING STATUS OF CASE AND REFERENCES			
		**TOTAL THIS DAY-----	0.20	
35013.4000	06/01/04 NOVELLUS	USPA ORBITAL POLISHER	0.30	
	TELEPHONE CONFERENCE WITH EXAMINER MCDONALD REGARDING LOUGHER REFERENCE			
35013.4000	06/01/04 NOVELLUS	USPA ORBITAL POLISHER	0.20	
	VOICEMAIL MESSAGE WITH EXAMINER REGARDING STATUS OF CASE AND LOUGHER REFERENCE			
		**TOTAL THIS DAY-----	0.50	
35013.4000	06/03/04 NOVELLUS	USPA ORBITAL POLISHER	0.20	
	VOICEMAIL MESSAGE WITH EXAMINER REGARDING			



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**OFFICE MEMORANDUM**

**TO:** Cindy Pillote **CLIENT MATTER NO.:** 35013.4000  
**FROM:** Examiner MacDonald  
U.S. Patent and Trademark Office  
**DATE:** June 14, 2004  
**RE:** VMM Received at 10:10 a.m. on Monday, June 14, 2004

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**OFFICE OF PETITIONS**

Hi, this is Examiner MacDonald returning your call in reference to case 09/836,426. Yes, I finally found somebody to discuss about the case and we will be issuing you a new first or a non-final action based upon you sending in the documentation that the patents were commonly owned. If you have any further questions, you can call me back at 703-308-8722.

**CERTIFICATE OF MAILING PURSUANT TO 37 C.F.R. §1.8**

I hereby certify that this correspondence pursuant to 37 C.F.R. §1.8, is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, Alexandria, Virginia 22313-1450 on:

Date October 15, 2003

By: Dee J. Mascari

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**PATENT**

**In re application:** Tim Dyer, et al.

**Docket No.:** 35013.4000

**Serial No.:** 09/836,426

**Group Art Unit:** 3723

**Filed:** April 17, 2001

**Examiner:** McDonald, Shantese L.

**Title:** **CHEMICAL MECHANICAL POLISHING METHOD AND APPARATUS FOR REMOVING MATERIAL FROM A SURFACE OF A WORKPIECE THAT INCLUDES LOW-K MATERIAL**

**Confirmation No.:** 6845

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**AMENDMENT AND RESPONSE TO OFFICE ACTION**

Mail Stop AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Dear Sir:

Applicants hereby respond to the Office Action dated July 15, 2003, within the three-month shortened statutory period to respond. Claims 1-33 remain pending in the application.

**COPY**

**Claims:**

1. (Previously Amended) An apparatus for polishing a surface of a workpiece, the surface including a low dielectric constant material, comprising:  
  
a platen configured to orbit about an axis at a speed up to about 2000 revolutions per minute;  
  
a polishing surface attached to the platen; and  
  
a workpiece carrier proximate the polishing surface.
2. (Previously Amended) The apparatus of claim 1, wherein the platen is configured to orbit at about 1000 orbits per minute.
3. (Original) The apparatus of claim 1, wherein the platen is further configured to dither.
4. (Previously Amended) The apparatus of claim 1, wherein the platen orbits with an orbital radius of about 0.25 to about 1 inch.
5. (Previously Amended) The apparatus of claim 1, wherein the carrier and the platen are configured to move the workpiece relative to the polishing surface at a speed of about 0.8 to about 3.2 meters per second.
6. (Original) The apparatus of claim 1, wherein the carrier is configured to apply about 0.25 to about 2 pounds per square inch pressure to the workpiece in the direction of the polishing surface.

COPY

7. (Original) The apparatus of claim 1, wherein the platen includes channels configured to allow polishing solution to circulate through a portion of the platen.
8. (Original) The apparatus of claim 7, wherein the platen is configured to allow the polishing slurry to flow at a rate of about 120 to about 200 milliliters per minute.
9. (Original) The apparatus of claim 1, wherein the platen is configured to orbit at a speed of about 500 to about 2000 orbits per minute.
10. (Original) The apparatus of claim 1, wherein the carrier includes a bladder to regulate pressure applied to the workpiece.
11. (Original) The apparatus of claim 1, wherein the platen includes a conduit configured to allow heat exchange fluid to flow through a portion of the platen.
12. (Previously Amended) A polishing system for removing material from a wafer surface, the wafer including low-k material, comprising:
- a plurality of polishing stations, wherein at least one of said plurality of polishing stations includes a platen configured to move at about 0.8 to about 3.2 meters per second relative to the wafer comprising low-k material;
  - a clean system including at least one clean station; and
  - a load station.

13. (Original) The polishing system of claim 12, further comprising a buff station.
14. (Original) The polishing system of claim 12, further comprising a carousel carrier apparatus including a plurality of workpiece carriers.
15. (Original) The polishing system of claim 14, wherein the plurality of workpiece carriers are configured to rotate about an axis and translate in a radial direction.
16. (Original) The polishing system of claim 14, wherein at least one of said plurality of workpiece carriers is configured to apply a about 0.25 to about 2 pounds per square inch to the workpiece in the direction of the platen.
17. (Original) The polishing system of claim 12, further comprising a workpiece carrier configured to rotate about an axis and apply about 0.25 to about 2 pounds per square inch to the workpiece in the direction of the platen.
18. (Original) The polishing system of claim 12, wherein the platen is configured to orbit.
19. (Original) The polishing system of claim 18, wherein the platen is configured to orbit with a radius of about 0.25 to about 1 inch.
20. (Original) The polishing system of claim 12, wherein the platen is configured to orbit about an axis at a speed of about 500 to about 2000 orbits per minute.

21. (Original) The polishing system of claim 12, further comprising a temperature control system configured to regulate a temperature of a polishing fluid.

22. (Original) The polishing system of claim 12, wherein the platen includes channels to allow polishing fluid to flow through a portion of the platen.

23. (Original) The polishing system of claim 12, wherein the platen includes a groove configured to allow heat exchange fluid to flow through a portion of the platen.

24. (Original) The polishing system of claim 12, further comprising a polishing surface attached to the platen, the polishing surface including apertures to allow polishing fluid to circulate through a portion of the polishing surface.

25. (Previously Amended) A polishing system for removing conductive material deposited onto low-k material, comprising:

a load and unload station;

a plurality of polishing stations, wherein at least one polishing station includes a platen configured to move relative to a workpiece comprising low-k material at about 0.8 to about 3.2 meters per second and a workpiece carrier configured to apply about 0.25 to about 2 psi to a workpiece in the direction of the platen; and

a clean system proximate the plurality of polishing station.

26. (Previously Amended) A method for removing material from a surface of a workpiece, including low-k material, comprising the steps of:

- providing a workpiece comprising low-k material;
- placing the workpiece comprising low-k material in contact with a polishing surface; and
- orbiting the polishing surface at a speed about 500 to about orbits per minute.

27. (Original) The method of claim 26, further comprising the step of rotating the wafer.

28. (Original) The method of claim 26, further comprising the step of applying about 0.25 to about 2 pounds per square inch to the workpiece in the direction of the polishing surface.

29. (Original) The method of claim 26, further comprising the step of circulating polishing fluid through a portion of the platen.

30. (Original) The method of claim 26, further comprising the step of regulating the temperature of the polishing surface.

31. (Original) The method of claim 26, further comprising the step of regulating the temperature of a polishing fluid.

32. (Previously Amended) An apparatus for polishing a surface of a workpiece, the surface including a low dielectric constant material, comprising:

- a platen configured to move about an axis;

a polishing surface attached to the platen; and

a workpiece carrier proximate the polishing surface, wherein the platen and the workpiece carrier are configured such that the surface of the workpiece comprising a low dielectric constant material and the platen move at a relative speed of about 0.8 to about 3.2 meters per second.

33. (Previously Amended) A method for removing material from a surface of a workpiece, including low-k material, comprising the steps of:

providing a workpiece comprising low-k material;

placing the workpiece comprising low-k material in contact with a polishing surface; and

moving the polishing surface and the workpiece comprising low-k material relative to each other at a speed of about 0.8 to about 3.2 meters per second.



**REMARKS**

The July 15, 2003 Office Action rejects all pending claims 1-33. In view of the remarks set forth below, Applicants respectfully request reconsideration and allowance of all pending claims.

**35 U.S.C. 103 Rejections**

As a preliminary matter, Applicants submit that United States Patent No. 6,409,580 in the name of Lougher et al. 2002 (hereinafter "Lougher et al.") is owned by Assignee of the present invention, and the subject matter of the Lougher et al. patent and the claimed invention were, at the time the invention was made, subject to an obligation of assignment to the same company. Furthermore, Lougher et al. did not issue until after the filing date of the present application, so it qualifies as prior art only under 35 U.S.C. 102(e)--thus, the reference is disqualified as prior art under 35 U.S.C. 103 (c).<sup>1</sup>

**Lougher et al. in view of Jeng**

Claims 1-9, 26-29, 32, and 33 stand rejected under 35 U.S.C as being unpatentable over Lougher et al. in view of United States Patent No. 6,054,769, issued to Jeng on April 25, 2000 (hereinafter "Jeng").

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<sup>1</sup> Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the

Jeng generally discloses a workpiece including low-k dielectric material. According to Jeng, the low-k material is selectively placed in desired areas by spinning the low-k material onto the workpiece surface and removing any excess material by *etching* (column 3, lines 4-6 and column 4, lines 33-34). Jeng further discloses that due to poor adhesion and other problems associated with low-k material, intermetal dielectric is deposited over the low-k material and polished or planarized (column 3, lines 11-16). Thus, Jeng teaches that polishing can be used for non-low-k dielectric materials, but it is not suitable for low-k materials. Accordingly, Jeng teaches away from the claimed invention and therefore does not anticipate or render obvious the claimed invention.

Additionally, because Laughner et al. is an improper 35 U.S.C. 103 reference, it cannot be combined with any other reference to render the claimed invention obvious. Accordingly, Applicants respectfully request that this rejection to claims 1-9, 26-29, 32, and 33 be reconsidered and withdrawn.

The Examiner states that various limitations in the dependent claims are obvious in view of the cited references because "it would be obvious to one having skill in the art at the time the invention was made to make the invention of Loughner et al. with the ...limitation, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimal or workable ranges involves only routine skill." Applicants submit that because no reference sets for the general conditions of using an orbital polisher to remove material from a workpiece including low-k material, the additional limitations are not obvious in view of the cited art. Specifically, no combination of references suggests any orbital speed, any orbital

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invention was made, owned by the same person or subject to an obligation of assignment to the same person. 35 U.S.C. 103(c).

radius, any speed of movement of the workpiece relative to the polishing head, any pressure, or any slurry flow rate for removing material from a workpiece including low-k material. Accordingly, none of the dependent claims including such limitations are obvious in view of the cited references.

Claims 2, 4-6 and 9 are additionally allowable over the cited reference. Claim 2 is additionally allowable over the cited reference because the reference does not teach or suggest "platen is configured to orbit at about an axis at about 1000 orbits per minute." Claim 4 is additionally allowable over the reference because the reference does not teach or suggest "an orbital radius of about 0.25 to about 1 inch." Claims 5 and 6 are additionally allowable over the reference because the reference does not teach or suggest "platen...configured to move the workpiece relative to the polishing surface at a speed of about 0.8 to about 3.2 meters per second" as set forth in claim 5 or "the carrier is configured to apply about 0.25 to about 2 pounds per square inch pressure to the workpiece in the direction of the polishing surface" as set forth in claim 6.

Claim 26 is not obvious over the cited reference because the reference does not teach or suggest "A method for removing material from a surface of a workpiece, including low-k material" or "providing a workpiece comprising low-k material" or "placing the workpiece comprising low-k material in contact with a polishing surface" or "orbiting the polishing surface at a speed about 500 to about orbits per minute." Furthermore, Jeng only teaches *etching* low-k material—it does not in any way teach or suggest polishing low-k material. Accordingly, Applicants request that the Examiner reconsider and withdraw the 35 U.S.C. §103(a) rejection to claims 26-29.

Claims 32 and 33 are similarly patentable over the cited reference because the reference does not teach or suggest "a workpiece carrier proximate the polishing surface, wherein the platen and the workpiece carrier are configured such that the surface of the workpiece comprising a low dielectric constant material and the platen move at a relative speed of about 0.8 to about 3.2 meters per second" as set forth in claim 32 or "A method for removing material from a surface of a workpiece, including low-k material" or "providing a workpiece comprising low-k material" or "placing the workpiece comprising low-k material in contact with a polishing surface" or "moving the polishing surface and the workpiece comprising low-k material relative to each other at a speed of about 0.8 to about 3.2 meters per second" as set forth in claim 33. Applicants therefore request that the Examiner additionally withdraw this rejection to claims 32 and 33.

**Lougher et al. in view of Jeng and in further view of Chen et al.**

Claim 10 stands rejected under the 35 U.S.C. §103(a) as being unpatentable over Lougher et al. in view of Jeng and in further view of United States Patent No. 6,241,593 B1, issued to Chen et al. June 5, 2001 (hereinafter "Chen et al."). Applicants traverse this rejection.

Chen et al. generally discloses a carrier head, including a bladder, for use with a rotary platen polishing apparatus. Nowhere does Chen et al. teach or suggest that the polishing head disclosed in Chen et al. could be used with a polishing apparatus including an *orbiting polishing station or polishing a workpiece comprising low-k material*. Thus, it would not be obvious to one skilled in the art to combine Jeng with Chen et al., and even if the references were combined, the combination of the references does not teach or suggest each and every element of claim 1, from which claim 10 depends. Specifically, no combination of the references teaches or

suggests "An apparatus for polishing a surface of a workpiece, the surface including a low dielectric constant material" or "a platen configured to orbit about an axis at a speed up to about 2000 revolutions per minute." Accordingly, claim 10 is allowable over the cited references and Applicants respectfully request that the Examiner withdraw this rejection to claim 10. Furthermore, as noted above, Lougher et al. cannot be combined, under 35 U.S.C. 103 to render the claimed invention obvious. Applicants therefore request that the Examiner reconsider and withdraw this rejection to claim 10.

**Lougher et al. in view of Jeng and in further view of Kawamoto et al.**

Claims 11, 30, and 31 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lougher et al. as modified by Jeng in view of United States Patent No. 6,416,384 B1, issued to Kawamoto et al. July 9, 2002 (hereinafter "Kawamoto et al."). Applicants traverse this rejection.

Similar to Chen et al., Kawamoto et al. only discloses a polishing apparatus including a rotating polishing table. Nowhere does Kawamoto et al. teach or suggest an orbiting polishing apparatus or how one could combine the rotary platen teachings of Kawamoto et al. with the workpiece disclosed in Jeng to form the claimed invention. Furthermore, even if Kawamoto et al. were combined with Jeng, the combination does not teach each and every element of the claimed invention. Specifically, the combination does not teach or suggest "An apparatus for polishing a surface of a workpiece, the surface including a low dielectric constant material" or "a platen configured to orbit about an axis at a speed up to about 2000 revolutions per minute" as set forth in claim 1, from which claim 11 depends or "A method for removing material from a surface of a workpiece, including low-k material" or "providing a workpiece comprising low-k

material” or “placing the workpiece comprising low-k material in contact with a polishing surface” or “orbiting the polishing surface at a speed about 500 to about orbits per minute” as set forth in claim 26, from which claims 30 and 31 depend. Accordingly, Applicants request that the Examiner reconsider and withdraw this rejection to claims 11, 30, and 31.

**Chen et al. in view of Aizawa et al. and in further view of Jeng**

Claims 12-17, 20 and 25 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chen et al. in view of United States Patent No. 6,036,582, issued to Aizawa et al. on March 14, 2000 (hereinafter Aizawa et al.) in further view of Jeng. Applicants traverse this rejection.

Aizawa et al. generally discloses a chemical mechanical polishing apparatus divided into a plurality of rooms cleaned to different degrees. Nowhere does either Aizawa et al. or Chen et al. teach or suggest any polishing apparatus or technique for removing material from a workpiece including low-k material as set forth in independent claims 12 and 25. Several of the limitations of these claims as well as the respective dependent claims are directed to apparatus or process techniques designed to remove particular material from a surface of a workpiece including low-k material. Because neither Aizawa et al. nor Chen et al. teach or disclose apparatus or method for removing material from a workpiece that includes low-k material and Jeng only teaches removing low-k material using an *etch process*, no combination of the references renders obvious any of Applicants' claims directed to removing material from a workpiece including low-k material. Furthermore, as the Examiner acknowledges, no combination of the references teaches or suggests a “platen configured to move relative to a workpiece surface at about 0.8 to about 3.2 meters per second and a workpiece carrier configured to apply about 0.25 to about 2

Claim 12 is not obvious in view of the cited references because no combination of these references teaches or suggests "A polishing system for removing material from a wafer surface, the wafer including low-k material" or "a plurality of polishing stations, wherein at least one of said plurality of polishing stations includes a platen configured to move at about 0.8 to about 3.2 meters per second relative to the wafer comprising low-k material." Accordingly, claims 21 and 23 that depend from claim 12 are not obvious in view of the cited references and Applicants therefore request that the Examiner reconsider and withdraw this rejection to claims 21 and 23.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and completed response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If, for any reason, the Examiner determines that one or more of the pending claims are not allowable, the undersigned respectfully requests a telephone call to discuss the matter.

Respectfully submitted

Date: 15-OCT-2000By: Sant B. Caplan, res. # 41,655, for  
Cynthia L. Pillote  
U.S. Reg. No. 42,999**SNELL & WILMER L.L.P.**

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THE U.S. PATENT AND TRADEMARK OFFICE OFFICIAL MAIL  
ROOM STAMP AFFIXED HERE TO ACKNOWLEDGE RECEIPT  
OF THE ITEMS CHECKED BELOW:

Serial No.: 09/836,426

Applicant: Tim Dyer et al.

Filing Date: April 17, 2001

Title: Chemical Mechanical Polishing Method &  
Apparatus for Removing Material From A  
Surface of a Workpiece that Includes  
Low-K Material

- ☐ Patent Application \_\_\_\_\_ Pages in Spec \_\_\_\_\_ No of Claims \_\_\_\_\_  
☐ Drawing Sheets: \_\_\_\_\_ (F) \_\_\_\_\_ (INF)  
☐ Check \$ \_\_\_\_\_ No. \_\_\_\_\_  
☐ Power of Attorney \_\_\_\_\_  
☐ Extension of Time (duplicate) \_\_\_\_\_  
☐ Preliminary Amendment \_\_\_\_\_  
☐ Amendment \_\_\_\_\_  
☐ Amendment after FINAL Rejection \_\_\_\_\_  
☐ Issue Fee (Base and/or Balance) \_\_\_\_\_  
☒ Response to 7/15/03 Office Action  
☐ Assignment, Coversheet and Fee \_\_\_\_\_  
☐ Declaration \_\_\_\_\_  
☒ Information Disclosure Statement & Form PTO/SB/08A  
☒ Notice of Appeal \_\_\_\_\_  
☒ Marked items placed in First Class Mail on  
October 15, 2003  
☐ Marked items filed via Express Mail No. \_\_\_\_\_  
\_\_\_\_\_ on \_\_\_\_\_

S&W Docket No.: 35013.4000 Atty: CLP

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*Appeal Brief due 12/15/03*

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PTO/SB/07 (08-03)  
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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>NOTICE OF APPEAL FROM THE EXAMINER TO THE BOARD OF PATENT APPEALS AND INTERFERENCES</b>		Docket Number (Optional) <b>35013.4000</b>					
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, VA on <u>October 15, 2003</u> .  Signature <u><i>Suzie G. Mascari</i></u> Typed or printed name <u>Suzie G. Mascari</u>		In re Application of <b>Tim Dyer, et al.</b> <hr/> <table style="width: 100%;"> <tr> <td style="width: 50%;">Application Number <b>09/836,426</b></td> <td style="width: 50%;">Filed <b>April 17, 2001</b></td> </tr> </table> <hr/> For <b>Chemical Mechanical Polishing Method and Apparatus for Removing Material from a Surface of a Workpiece that Includes Low-K Material</b> <hr/> <table style="width: 100%;"> <tr> <td style="width: 50%;">Art Unit <b>3723</b></td> <td style="width: 50%;">Examiner <b>Shantese L. McDonald</b></td> </tr> </table>		Application Number <b>09/836,426</b>	Filed <b>April 17, 2001</b>	Art Unit <b>3723</b>	Examiner <b>Shantese L. McDonald</b>
Application Number <b>09/836,426</b>	Filed <b>April 17, 2001</b>						
Art Unit <b>3723</b>	Examiner <b>Shantese L. McDonald</b>						
Applicant hereby <b>appeals</b> to the Board of Patent Appeals and Interferences from the last decision of the examiner.							
The fee for this Notice of Appeal is (37 CFR 1.17(b))		\$ <u>330.00</u>					
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. Therefore, the fee shown above is reduced by half, and the resulting fee is:		\$ _____					
<input type="checkbox"/> A check in the amount of the fee is enclosed.							
<input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.							
<input checked="" type="checkbox"/> The Director has already been authorized to charge fees in this application to a Deposit Account. I have enclosed a duplicate copy of this sheet.							
<input checked="" type="checkbox"/> The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. <u>19-2814</u> . I have enclosed a duplicate copy of this sheet.							
<input type="checkbox"/> A petition for an extension of time under 37 CFR 1.36(a) (PTO/SB/22) is enclosed.							
<b>WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.</b>							
I am the		<u><i>Santo C. Ceph, res # 41,655, for</i></u> Signature					
<input type="checkbox"/> applicant/inventor.		<u>Cynthia L. Pillote</u> Typed or printed name					
<input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)		<u>602-382-6296</u> Telephone number					
<input type="checkbox"/> attorney or agent of record. Registration _____		<u>October 15, 2003</u> Date					
<input checked="" type="checkbox"/> attorney or agent acting under 37 CFR 1.34(a). Registration number if acting under 37 CFR 1.34(a). <u>42,999</u>							
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.							

☐ \*Total of \_\_\_\_\_ forms are submitted.

This collection of information is required by 37 CFR 1.8. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing the burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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**AMENDMENT TRANSMITTAL LETTER (Large Entity)**

Applicant(s): Tim Dyer et al.

Docket No.

35013.4000

Sérial No.

09/836,426

Filing Date

April 17, 2001

Examiner

McDonald, Shantese L.

Group Art Unit

3723

Invention: **CHEMICAL MECHANICAL POLISHING METHOD AND APPARATUS FOR REMOVING MATERIAL FROM A SURFACE OF A WORKPIECE THAT INCLUDES LOW-K MATERIAL**

TO THE COMMISSIONER FOR PATENTS:

Transmitted herewith is an amendment in the above-identified application.

The fee has been calculated and is transmitted as shown below.

**CLAIMS AS AMENDED**

	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST # PREV. PAID FOR	NUMBER EXTRA CLAIMS PRESENT	RATE	ADDITIONAL FEE
TOTAL CLAIMS	33 -	33 =	0 x	\$18.00	\$0.00
INDEP. CLAIMS	6 -	6 =	0 x	\$86.00	\$0.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
TOTAL ADDITIONAL FEE FOR THIS AMENDMENT					\$0.00

- ☒ No additional fee is required for amendment.
- ☐ Please charge Deposit Account No. \_\_\_\_\_ in the amount of \_\_\_\_\_
- ☐ A check in the amount of \_\_\_\_\_ to cover the filing fee is enclosed.
- ☒ The Director is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 19-2814
- ☒ Any additional filing fees required under 37 C.F.R. 1.16.
- ☐ Any patent application processing fees under 37 CFR 1.17.

*Suzie G. Mascari, Reg. H 41,655 for*  
Signature

Dated: October 15, 2003

**COPY**

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I certify that this document and fee is being deposited on October 15, 2003 with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

*Suzie G. Mascari*  
Signature of Person Mailing Correspondence

Suzie G. Mascari

Typed or Printed Name of Person Mailing Correspondence

CC: